We Claim:

1.   A method of verifying a data path from a source node to a destination node in a bridged Ethernet network, the data path including a source edge node connected to the source node and a destination edge node connected to the destination node, comprising the steps of:

a)creating, at the source edge node, a path verification request message;

b) encapsulating, by the source edge node, the request message in a first Ethernet frame including a path verification request indication;

c) sending the first Ethernet frame towards the destination node along the data path;

d) detecting, at the destination edge node, the first Ethernet frame;

e) creating, at the destination edge node, a path verification response message;

f) encapsulating, by the destination edge node, the response message in a second Ethernet frame including a path verification response indication;

g) sending the second Ethernet frame towards the source node along the data path;

h) detecting, at the source edge node, the second Ethernet frame; and

i)determining, by the source edge node responsive to receiving the response message, that the data path is operational.

2.   The method as defined in claim 1 wherein steps d) and h) include the step of filtering the frames from data traffic on the data path according to request and response indications respectively.

3.   The method as defined in claim 1 wherein steps b) and f) include the step of addressing the frames to the destination/source edge nodes and steps d) and h) include the step of terminating the frames.

4.   The method as defined in claim 3 wherein prior to step a) the destination edge node is discovered.

5.   The method as defined in claim 4 wherein the destination edge node is discovered by using a hop-by-hop technique wherein the address of the destination node is carried by a discover request message.

6.   The method as defined in claim 4 wherein destination edge node is discovered by sending a discover request message to a special multicast address, and the destination edge node adjacent to the destination node responds to the discover request message.

7.   The method as defined in claim 1 further include the step of calculating a round trip delay by adding a time stamp to the verification message and calculating, by the source edge node the delay responsive to receiving the response message.

8.   A system for verifying a data path from a source node to a destination node in a bridged Ethernet network, the data path including a source edge node connected to the source node and a destination edge node connected to the destination node, comprising:

means, at the source edge node, for creating a path verification request message;

means, at the source edge node, for encapsulating the request message in a first Ethernet frame including a path verification request indication;

means for sending the first Ethernet frame towards the destination node along the data path; .

means, at the destination edge node, for detecting the first Ethernet frame;

means, at the destination edge node, for creating a path verification response message;

means at the destination edge node for encapsulating the response message in a second Ethernet frame including a path verification response indication;

means for sending the second Ethernet frame towards the source node along the data path;

means, at the source edge node, for detecting the second Ethernet frame; and

means, at the source edge node responsive to receiving the response message, for determining that the data path is operational.

9.   A method of tracing a data path route from a source node to a destination node through multiple intermediate nodes in a bridged Ethernet system comprising:

sending a succession of Ethernet encapsulated route query messages from the source node, each message containing a media access control (MAC) address of the destination node;

receiving, at route trace enabled bridges in the system, the encapsulated route query messages;

determining at a control plane of the route trace enabled bridges a MAC address of a next hop bridge on route to the destination node;

returning the MAC address of the next hop bridge to source node in a response message;

repeating the sequence through remaining intermediate bridges until a response message indicating that the destination node has been identified; and

tabulating information in the response messages.

10. The method as defined in claim 9 wherein when the encapsulated route query messages are received at a non-enabled route trace bridge steps are taken to skip to a route trace enabled bridge.

11. The method as defined in claim 10 wherein the service node sends a multi cast message to nodes downstream of the non-enabled bridge to locate a route trace enable bridge in the route to the destination node.

12. The method as defined in claim 11 wherein the encapsulated route query message is sent to the bridge next to the non-enabled bridge which responds to the multi cast message.

13. The method as defined in claim 9 wherein the query message includes address information of the source and destination nodes at connection type.

14. The method as defined in claim 9 wherein the query message also includes a time stamp value entered by the control plane at respective route trace enabled bridges.

15. The method as defined in claim 9 wherein the response message includes address information of the source nodes and destination node.

16. The method as defined in claim 9 wherein the step of tabulating information generates a report defining bridges traversed by the Ethernet frame.

17. The method as defined in claim 14 wherein time stamp information respecting each bridge traversed included in the report.

18.   A system for tracing a data path route from a source node to a destination node through multiple intermediate nodes in a bridged Ethernet system comprising:

means for sending a succession of Ethernet encapsulated route query messages from the source node, each message containing a media access control (MAC) address of the destination node;

a control plane at route trace enabled bridges in the system to receive the encapsulated route query messages;

means at a control plane of the route trace enabled bridges for determining a MAC address of a next hop bridge on route to the destination node;

returning the MAC address of the next hop bridge to source node in a response message;

means for repeating the sequence through remaining intermediate bridges until a response message indicating that the destination node has been identified; and

means for tabulating information in the response messages.